

IN THE CLAIMS

1 - 5. (Cancelled)

6. (Currently Amended) The electrochemical cell system of ~~claim 5, claim 9~~, wherein the ~~hydrophobic~~ polymer is selected from the group consisting of polytetrafluoroethylene, fluorinated ethylene propylene, polyvinylidenefluoride, ethylene chlorotrifluoroethylene copolymer, ethylene tetrafluoroethylene, perfluoroalkoxy, tetrafluoroethylene perfluoromethylvinylether copolymer, and mixtures comprising at least one of the foregoing hydrophobic polymers.

7. (Currently Amended) The electrochemical cell system of ~~claim 5, claim 9~~, wherein the ~~hydrophilic~~ polymer is selected from the group consisting of proton conductive ionomers and ion exchange resins.

8. (Cancelled)

9. (Previously Presented) An electrochemical cell system, comprising:

- a first electrode;
- a second electrode;
- a membrane disposed between and in intimate contact with the first electrode and the second electrode;
- a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane;
- a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side; and
- a porous flow field member in fluid communication with the first flow field, wherein the porous flow field member comprises a porous support;
- wherein the porous support has a graded hydrophilicity, a combination of a graded hydrophobicity and graded porosity, or a combination of a graded hydrophilicity and graded porosity, and wherein the porous support is integrated with a polymer or a combination of a polymer and an electrically conductive material, wherein the polymer is an elastomer, and wherein the elastomer is threaded, woven, or stitched within the porous support; and
- wherein the porous support is a screen, a perforated sheet, a pierced sheet, a sintered metal cloth, an etched sheet, a felt, or a woven mesh comprising a material selected from the group consisting of niobium, zirconium, tantalum, titanium, nickel, cobalt, steel, mixtures comprising at least one of the foregoing materials, and alloys comprising at least one of the foregoing materials.

10-17. (Cancelled)

18. (Previously Presented) An electrochemical cell system, comprising:

- a first electrode;
- a second electrode;
- a membrane disposed between and in intimate contact with the first electrode and the second electrode;
- a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane;

a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side; and

a porous flow field member in fluid communication with the first flow field, wherein the porous flow field member comprises a porous support having a graded hydrophilicity, a combination of a graded hydrophobicity and graded porosity, or a combination of a graded hydrophilicity and graded porosity, and wherein the porous flow field member further comprises a catalyst; and

wherein the porous support is a screen, a perforated sheet, a pierced sheet, a sintered metal cloth, an etched sheet, a felt, or a woven mesh comprising a material selected from the group consisting of niobium, zirconium, tantalum, titanium, nickel, cobalt, steel, mixtures comprising at least one of the foregoing materials, and alloys comprising at least one of the foregoing materials.

19. (Original) The electrochemical cell system of claim 18, wherein the catalyst is selected from the group consisting of platinum, palladium, rhodium, carbon, gold, tantalum, tungsten, ruthenium, iridium, osmium, alloys comprising at least one of the foregoing materials, and mixtures comprising at least one of the foregoing catalysts.

20. (Currently Amended) The electrochemical cell system of ~~claim 21- claim 18~~, wherein the porous support comprises a material that is non-oxidizable at anodic potentials of less than about 4 volts.

21-56. (Cancelled)

57. (Currently Amended) The electrochemical cell system of ~~claim 8- claim 9~~, wherein the electrically conductive material is selected from the group consisting of niobium, zirconium, tantalum, titanium, cobalt, mixtures comprising at least one of the foregoing materials, and alloys comprising at least one of the foregoing materials.

58. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises niobium.

59. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises zirconium.

60. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises tantalum.

61. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises titanium

62. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises cobalt.

63. (Currently Amended) The electrochemical cell system of ~~claim 24~~ claim 18, wherein the electrically conductive material comprises niobium.

64. (Previously Presented) The electrochemical cell system of claim 21, wherein the electrically conductive material comprises zirconium.

65. (Previously Presented) The electrochemical cell system of claim 21, wherein the electrically conductive material comprises tantalum.

66. (Previously Presented) The electrochemical cell system of claim 21, wherein the electrically conductive material comprises titanium

67. (Previously Presented) The electrochemical cell system of claim 21, wherein the electrically conductive material comprises cobalt.